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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,006	10/27/2003	Rajesh S. Madukkarumukumana	P16187	9173

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EXAMINER

SUN, SCOTT C

ART UNIT

PAPER NUMBER

2182

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/695,006	MADUKKARUMUKUMANA ET AL.	
	Examiner	Art Unit	
	Scott Sun	2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 9-13, 15, 17, 18, 20-24 and 26 is/are rejected.
- 7) ☐ Claim(s) 6, 8, 14, 16, 19, 25 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection. Applicant's questions/comments made in remarks (page 13) are answered in rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5, 7, 9-13, 15, 17, 18, 20-24, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Starr et al (WO 02/27519) in view of Platko et al (US Patent #6,282,626) and Yeh et al (NPL, "Introduction to TCP/IP Offload Engine, IDS submitted 4/12/2004).

4. As per claim 1, Starr discloses: a method (method in figure 2), comprising: allocating, by a protocol processor (CPU 30), metadata (data in CCB) related to a packet in a host memory (protocol stack 38, page 10, lines 19-26), wherein the host memory is comprised in a host (20) that is coupled to a network adapter (INIC 22, page 7, lines 13-14, page 7, line 21); Examiner notes that CPU 30 runs the protocol stack (page 10, line 7).

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copying, by the protocol processor, the metadata from the host memory to an adapter memory (INIC memory 46) associated with the network adapter (page 12, lines 26-29, page 10, lines 26-28); and

processing, by the protocol processor, the copied metadata. (page 10, lines 28-30).

Starr does not disclose explicitly protocol processor is included in the network adapter. However, Yeh discloses a protocol processor (TOE) that is included in a network adapter (page 2, bottom figure; page 3, lines 1-2). Teachings of Starr and Yeh are from analogous art of network adapters.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to combine teachings of Starr and Yeh by modifying the network adapter processor (44) into a TCP/IP offload engine processor for the benefit of easing networking bottleneck (Yeh, page 2, paragraph 2). Examiner notes that INIC processor (44) in Starr's system processes the copied metadata (CCB, page 10, lines 28-30). This would make correlate well with combined teachings of Starr and Yeh because all functions in claim 1 would be performed by a single processor (TOE) on the network adapter.

Further regarding claim 1, Starr and Yeh combined do not disclose explicitly copying metadata in anticipation of a requirement for protocol processing. However, Platko discloses a method for anticipating requirement for protocol processing (column 1, lines 36-47; column 2, lines 23-33). Examiner notes that Platko teaches when a packet is being moved from a host memory to a Network Adapter, multiple packet descriptors (interpreted as metadata) for packets close to the first packet are prefetched into a "snoop" buffer located in a network adapter, because they will likely be used in the future (interpreted as anticipation, also see abstract). Teachings of Starr, Yeh, and Platko are from analogous art of network adapters.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to combine teachings of Starr, Yeh, and further with teachings of Platko by adding logic that causes metadata to be stored in a "snoop" buffer as disclosed by Platko in the adapter system disclosed by the combined teachings of Starr and Yeh for the benefit of reducing memory latency (Platko, column 1, lines 55-57).

5. As per claim 2, Starr, Yeh, and Platko discloses claim 1 and Platko further discloses: wherein the copying further comprises: fetching the metadata from the host memory to the adapter memory, using at least one criterion anticipate the requirement for protocol processing of the metadata by the protocol processor (see examiner's arguments for claim 1).

6. As per claim 3, Starr, Yeh, and Platko discloses claim 1 and Starr further discloses: wherein the metadata is stored in a protocol control block (CCB) of a transport protocol, (page 10, lines 21-26) and wherein the protocol control block indicates a state of a session handled by the protocol processor (page 11, lines 12-16), wherein the protocol processor reduces requirements for the adapter memory by utilizing the host memory to store the metadata (page 10, lines 19-26).

Further regarding claim 3, Starr, Yeh, and Platko discloses claim 1 and Starr further discloses: and wherein the metadata is prefetched in anticipation of the requirement for protocol processing of the metadata by the protocol processor (see arguments for claim 1).

7. As per claim 4, Starr, Yeh, and Platko discloses claim 1 and Starr further discloses: the method of claim 1, further comprising: receiving, by the protocol processor, a request for sending a packet; (page 14, lines 27-28). Starr, Yeh, and Platko do not disclose expressly maintaining a data structure to indicate sessions capable of processing requests, copying the metadata from the host memory to the adapter memory, in response to determining based at least in part upon the data structure that the request can be associated with a session that is capable of processing requests. However, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to construct a data structure to identify sessions that are capable of processing requests because it would enable protocol processor to track network workload on the host, determine network traffic in relation to the host, and avoid sending data to a destination that is not ready to receive the packet.

8. As per claim 5, Starr discloses:

The method of claim 1, further comprising: receiving, by the protocol processor, a request for sending a packet; (page 14, lines 27-28)

Starr does not disclose expressly maintaining a data structure to indicate sessions capable of processing requests; determining from the data structure whether the request can be associated with a session that is capable of processing requests.

However, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to construct a data structure to identify sessions that are capable of processing requests because it would enable Starr's protocol processor to track network workload on the host, determine network traffic in relation to the host, and avoid sending data to a destination that is not ready to receive the packet.

Starr does not disclose expressly if the request cannot be associated with any session that is capable of processing the request then queuing the request for later processing.

However, at the time of the invention, it would have been obvious to a person of ordinary skill to re-queue the request for later processing when no session is capable of processing the request because information exchange on networks have high-low patterns, and sending a packet at a later time when traffic is less congested is generally more efficient than generating an error and abandoning the request.

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9. As per claim 7, Starr, Yeh, and Platko discloses claim 3 and Starr further discloses wherein the network adapter is an offload engine adapter (page 4, lines 8-15) Starr does not disclose expressly, "and wherein the host memory is larger in size than the adapter memory". However, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to make host memory larger in size than the adapter memory because host memory in general have to store data from a greater number of software and hardware sources that collectively require greater memory space.

10. Claims 9-13, 15, 17, 18, 20-24, 26 are substantially similar to the above rejected claims. The same arguments used in rejection of claims 1-5, 7 are applied.

Allowable Subject Matter

11. Claims 6, 8, 14, 16, 19, 25, 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is the statement of reasons for the indication of allowable subject matter: the prior art disclosed by the applicant and cited by the Examiner fail to teach or suggest, alone or in combination, all the limitations of the above claims, particularly *a delayed acknowledgement timer, wherein the delayed acknowledgment timer is associated with a session, and wherein copying of the metadata from the host memory to the adapter memory is performed in response to determining that the delayed acknowledgement*

timer is likely to expire in a period of time; and wherein the network adapter is included in a chip set that includes a central processing unit of the host.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Sun whose telephone number is (571) 272-2675. The examiner can normally be reached on M-F, 10:30am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim N. Huynh can be reached on (571) 272-4147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SS

1/17/2006

Mano Padmanabhan
1/19/06

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